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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,885	08/26/2003	Thomas Stack	QTI-10502/01	7827
7590	10/06/2005		EXAMINER PHILOGENE, HAISSA	
John G. Posa Gifford, Krass, Groh, Sprinkle, Anderson & Citkowski, P.C. 280 N. Old Woodward Ave., Suite 400 Birmingham, MI 48009-5394			ART UNIT	PAPER NUMBER
			2828	
			DATE MAILED: 10/06/2005	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/649,885

Applicant(s)

STACK, THOMAS

Examiner

Haissa Philogene

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/25/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-16 and 19-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-16 and 19-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/4/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments with respect to claims 1, 4-16 and 19-24 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argued, "with respect to Stack, US Patent No. 6,222,322, that the instant invention represents an improvement utilizing frequency selectivity and processing the energy spectrum used to detect an abnormal condition. In particular, inductive and/or capacitive components are used which have frequency-dependent properties, as now claimed". The examiner's position is that the argument does not reflect what is actually being claimed.

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 6, 7, 14, 15, 22 and 23 are objected to because of the following informalities:

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- In claims 6, 14 and 22, change “the” before “sensing circuit” to –a--;
- In claims 7, 15 and 23, change “should be” to –is—since “should be” does not constitute a positive limitation.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Alexandrov, Patent No. 6,809,483.

As per claim 1, Alexandrov discloses in Figs.2 and 4 a shut-down circuit configured for use with an electronic ballast coupled to a lamp in a control path (through connector pins P8, P6), comprising a device (filter circuit R25, C27) for sensing electrical energy associated with the control path, e.g. sensing Vac at the input of the inverter resonant tank (L1, C3) which is utilized to detect the arc in the connector, and an electrical circuit (R25, C27, D44, D45, C28, R27, M4) for shutting down the ballast through disable terminal B via D47 in the event that the sensed energy (Vac) contains

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high-frequency noise indicative of arcing caused by lamp removal (see Col.1, lines 8-11 and Col.3, lines 32-59).

As per claim 6, Alexandrov discloses electronic componentry M4 to disable the sensing circuit (R25, C27, D44, D45, C28, R27, M4) during initial energization of the lamp once capacitor (28) is discharged through resistor (27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stack, Patent No. 6,222,322.

Stack discloses in Fig. 5 a shut-down circuit (202) configured for use with an electronic ballast (100) coupled to a lamp (FL1) in a control path by way of isolation transformer T5, comprising a device (R6) for sensing electrical energy associated with the control path; an electrical circuit (112) including a node Vc that is below a predetermined electrical potential (the threshold voltage of the Schmitt trigger 204) when lamp is operating properly; and a Schmitt trigger switch (204) coupled to the node Vc that turns on or off to shutdown the ballast if the node Vc is above the predetermined electrical potential (see Col.10, line 59- Col.11, line 12). Stack does not disclose the node Vc that is at or near the predetermined electrical potential when lamp is operating

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properly and the node Vc that is not at or near the predetermined electrical potential when lamp is not operating properly (shutdown). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the node at or near the predetermined electrical potential during normal operation and not at or near the predetermined electrical potential during abnormal operation in lieu of the node below the predetermined electrical potential during normal operation and above the predetermined electrical potential during abnormal operation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Sun, Patent No. 5,574,335.

Alexandrov discloses the claimed invention substantially as explained above except for the sensing device being an optical isolator. Sun discloses a shut-down circuit having a sensing device 24 including an optical isolator TR1 for disabling an inverter upon triggering, thereby causing a shut-down in the ballast (see Col6, lines 50-60). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to employ the optical isolator as taught by Sun into the Alexandrov type shut-down circuit. This can be done by replacing the Alexandrov's sensing circuit with the Sun's sensing circuit. Thus, it would allow disabling of the inverter upon triggering, thereby causing the ballast to shut-down.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Jayaraman et al., Patent No. 5,650,694.

Alexandrov discloses the claimed invention substantially as explained above except for the sensing device being an isolation transformer. Jayaraman discloses a shut-down circuit having a sensing device in safety circuit H including an isolation transformer T4 (fig.2b) which senses a capacitive mode of operation of an inverter or open circuit lamp voltage via a tap on the primary winding 184 based on lamp removal to lead to inverter shut-down, thereby causing a shut-down in the ballast. . It would have been obvious to a person having ordinary skill in the art at the time the invention was made to employ the isolation transformer as taught by Jayaraman into the Alexandrov type shut-down circuit. This can be done by replacing the Alexandrov's sensing circuit with the Jayaraman's sensing circuit. Thus, it would allow shutting down of the inverter and consequently shutting down of the ballast upon lamp removal.

Claims 9, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Holmquest, Patent No. 5,619,105.

As per claim 9, Alexandrov discloses the claimed invention substantially as explained above except for the electrical circuit including a high-pass filter or differentiator and detector. Holmquest discloses a shut-down circuit used with an electronic ballast coupled to a lamp having an electrical circuit (T5, C11, R6, D11, C12, R7, C13, Q3, R8 and Q4) which includes a high-pass filter (C11, R6) and detector (T5) so that only high frequency RF signals from arcing can pass through the filter. It would

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have been obvious to one having ordinary skill in the art at the time the invention was made the electrical circuit as taught by Holmquest into the Alexandrov type circuit. This can be done by replacing the Alkexandrov' s electrical circuit with the Holmquest's electrical circuit. Thus, it would allow only high frequency RF signals from arcing to pass through the filter and ensure a rapid shut-down by applying, after the thyristor Q4 is turned on, a reverse voltage to the base to emitter of the transistor Q2, thereby improving the efficacy of the circuit.

As per claim 11, Alexandrov discloses the claimed invention substantially as explained above. Note that the sensed energy Vac represents voltage fluctuations when arcing occurs. Further, Alexandrov discloses a LPF in lieu of a HPF in shutting the ballast. However, Holmquest discloses a shut-down circuit used with an electronic ballast coupled to a lamp having a HPF (C11, R6) that attenuates high frequency lamp current signal detected at the toroid and passes only high frequency RF signals resulting from arcing. It would have obvious to one having ordinary skill in the art at the time the invention was made to employ the HPF as taught by Holmquest into the Alexandrov type circuit. This can be done by replacing the Alexandrov' s arc detection and shutdown circuit including the LPF with the Holmquest's arc detection and shutdown circuit including the HPF. Thus, it would allow only high frequency RF signals from arcing to pass through the filter and ensure a rapid shut-down by applying, after the thyristor Q4 is turned on, a reverse voltage to the base to emitter of the transistor Q2, thereby improving the efficacy of the circuit.

As per claim 14, Alexandrov in view of Holmquest discloses the claimed invention substantially as explained above. Further, Alexandrov discloses electronic componentry M4 to disable the sensing circuit (R25, C27, D44, D45, C28, R27, M4) during initial energization of the lamp once capacitor (28) is discharged through resistor (27).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Holmquest as applied to claim 11 above, and further in view of Jayaraman et al.

Alexandrov in view of Holmquest discloses the claimed invention substantially as explained above except for the sensing device being an isolation transformer. Jayaraman discloses a shut-down circuit having a sensing device in safety circuit H including an isolation transformer T4 (fig.2b) which senses a capacitive mode of operation of an inverter or open circuit lamp voltage via a tap on the primary winding 184 based on lamp removal to lead to inverter shut-down, thereby causing a shut-down in the ballast. . It would have been obvious to a person having ordinary skill in the art at the time the invention was made to employ the isolation transformer as taught by Jayaraman into the Alexandrov in view of Holmquest type shut-down circuit, because it would allow shutting down of the inverter and consequently shutting down of the ballast upon lamp removal.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Holmquest as applied to claim 11 above, and further in view of Sun.

Alexandrov in view of Holmquest discloses the claimed invention substantially as explained above except for the sensing device being an optical isolator. Sun discloses a shut-down circuit having a sensing device 24 including an optical isolator TR1 for disabling an inverter upon triggering, thereby causing a shut-down in the ballast (see Col.6, lines 50-60). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to employ the optical isolator as taught by Sun into the Alexandrov in view of Holmquest type shut-down circuit, because it would allow disabling of the inverter upon triggering, thereby causing the ballast to shut-down.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Holmquest as applied to claim 11 above, and further in view of Stack.

Alexandrov in view of Holmquest discloses the claimed invention substantially as explained above except for the shutting down circuit including a node that is at or near a predetermined electrical potential when the lamp is operating properly and a Schmitt trigger switch coupled to the node that turns on or off to shut down the ballast if the node is not at or near the predetermined electrical potential. Stack discloses in Fig. 5 a shut-down circuit (202) including a node Vc that is below a predetermined electrical potential (the threshold voltage of the Schmitt trigger 204) when lamp is operating

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properly; and a Schmitt trigger switch (204) coupled to the node Vc that turns on or off to shutdown the ballast if the node Vc is above the predetermined electrical potential (see Col.10, line 59- Col.11, line 12). Although Stack does not disclose the node Vc that is at or near the predetermined electrical potential when lamp is operating properly and the node Vc that is not at or near the predetermined electrical potential when lamp is not operating properly (shutdown). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the node at or near the predetermined electrical potential during normal operation and not at or near the predetermined electrical potential during abnormal operation in lieu of the node below the predetermined electrical potential during normal operation and above the predetermined electrical potential during abnormal operation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the shutting down circuit as taught by Stack into the Alexandrov in view of Holmquest type system, because it would allow a less costly operation with fewer components and a reduction of the possibility of ballast failure, thereby improving the efficacy of the system.

Claims 10, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Szepesi, Patent No. 4,535,399.

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As per claims 10 and 19, Alexandrov discloses the claimed invention substantially as explained above. Further, Alexandrov discloses the sensed energy Vac readable as voltage fluctuations when arcing occurs, and a LPF (R25C27) in the shutdown circuit. Alexandrov does not disclose the electrical circuit including a PLL coupled to a LPF. Szepesi discloses in Fig.6 an electronic ballast coupled to a lamp having an electrical circuit (59, 60, 19, 17) which includes a PLL 17 with an integrator type LPF (28, see Fig.2) to generate a driving signal which is phase adjusted for optimum switching performance. It would have obvious to a person having ordinary skill in the art at the time the invention was made to employ the PLL-LPF arrangement as taught by Szepesi into the Alexandrov type circuitry, because it would allow a generation of driving signal that is phase adjusted for optimum switching performance, thereby adjusting any output frequency to the load.

As per claim 22, Alexandrov in view of Szepesi discloses the claimed invention substantially as explained above. Further, Alexandrov discloses electronic componentry M4 to disable the sensing circuit (R25, C27, D44, D45, C28, R27, M4) during initial energization of the lamp once capacitor (28) is discharged through resistor (27).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Szepesi as applied to claim 19 above, and further in view of Jayaraman et al.

Alexandrov in view of Szepesi discloses the claimed invention substantially as explained above except for the sensing device being an isolation transformer.

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Jayaraman discloses a shut-down circuit having a sensing device in safety circuit H including an isolation transformer T4 (fig.2b) which senses a capacitive mode of operation of an inverter or open circuit lamp voltage via a tap on the primary winding 184 based on lamp removal to lead to inverter shut-down, thereby causing a shut-down in the ballast. . It would have been obvious to a person having ordinary skill in the art at the time the invention was made to employ the isolation transformer as taught by Jayaraman into the Alexandrov in view of Szepesi type circuit, because it would allow shutting down of the inverter and consequently shutting down of the ballast upon lamp removal.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Szepesi as applied to claim 19 above, and further in view of Sun.

Alexandrov in view of Szepesi discloses the claimed invention substantially as explained above except for the sensing device being an optical isolator. Sun discloses a shut-down circuit having a sensing device 24 including an optical isolator TR1 for disabling an inverter upon triggering, thereby causing a shut-down in the ballast (see Col.6, lines 50-60). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to employ the optical isolator as taught by Sun into the Alexandrov in view of Szepesi type circuit, because it would allow disabling of the inverter upon triggering, thereby causing the ballast to shut-down.

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandrov in view of Szepesi as applied to claim 19 above, and further in view of Stack.

Alexandrov in view of Szepesi discloses the claimed invention substantially as explained above except for the shutting down circuit including a node that is at or near a predetermined electrical potential when the lamp is operating properly and a Schmitt trigger switch coupled to the node that turns on or off to shut down the ballast if the node is not at or near the predetermined electrical potential. Stack discloses in Fig. 5 a shut-down circuit (202) including a node Vc that is below a predetermined electrical potential (the threshold voltage of the Schmitt trigger 204) when lamp is operating properly; and a Schmitt trigger switch (204) coupled to the node Vc that turns on or off to shutdown the ballast if the node Vc is above the predetermined electrical potential (see Col.10, line 59- Col.11, line 12). Although Stack does not disclose the node Vc that is at or near the predetermined electrical potential when lamp is operating properly and the node Vc that is not at or near the predetermined electrical potential when lamp is not operating properly (shutdown). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the node at or near the predetermined electrical potential during normal operation and not at or near the predetermined electrical potential during abnormal operation in lieu of the node below the predetermined electrical potential during normal operation and above the predetermined electrical potential during abnormal operation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the

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optimum or workable ranges involves only routine skill in the art. Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the shutting down circuit as taught by Stack into the Alexandrov in view of Zsepesi type system, because it would allow a less costly operation with fewer components and a reduction of the possibility of ballast failure, thereby improving the efficacy of the system.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Haissa Philogene whose telephone number is (571) 272-1827. The examiner can normally be reached on 6:30 A.M.-6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hp

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